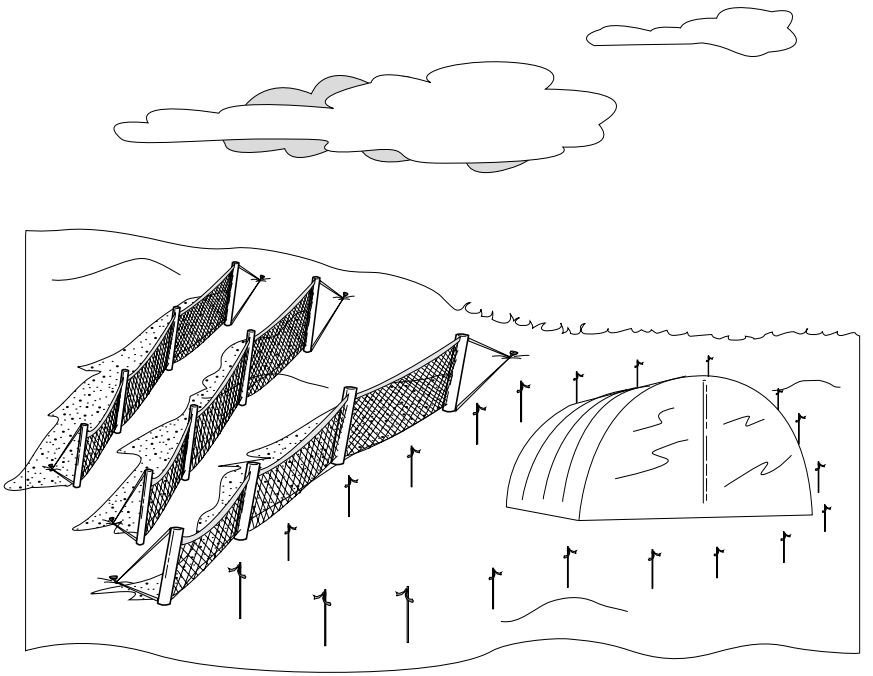

Extending the growing season enhances plant growth and microbial activity in tundra soils by increasing the amount of time the tundra is exposed to sunlight and thawing temperatures. The brief summers of the North Slope allow very little time for seeds to sprout and become established and for established plants to grow before freezing temperatures return in September.

The following techniques may be used to extend the growing season.

- ***Early spring snow removal:*** Scraping snow off the tundra surface (Tactic T-10) will speed spring thawing and promote plant growth and microbial activity. Snow can be removed by hand from small areas or with heavy equipment as long as the ground is frozen. Scrape snow off the tundra surface without disturbing the vegetation or root mat.
- ***Snow fencing:*** Snow fencing will keep snowdrifts off recovering sites and will speed spring thawing and promote plant growth and microbial activity. Snow fencing must be placed perpendicular to the prevailing winds, built approximately 4 to 8 feet high, and secured with guy-wires. Place one fence within several feet of the site, and stagger 2 or 3 rows of fencing behind it at 30- to 50-foot intervals. The length of the fences depends on the size of the site.
- ***Tenting:*** A tent can be constructed to create a snow-free, heated environment to enhance plant growth and microbial activity. This tactic can be used during spring, summer, and fall. A low tent made with clear polyethylene sheeting and lumber or metal frame can be inflated, heated, and ventilated with a forced-air heater unit.

APPLICABILITY

- *Spilled Substance:* All
- *Tundra Types:* All
- *Season:* All

CONSIDERATIONS AND LIMITATIONS

- Consider the trade-off between early snow removal and loss of insulating layer for vegetation while ambient temperatures are still relatively cool.
- Snow removal in early spring may limit the summer water supply on site. Irrigation (Tactic T-15) may be required during the growing season.
- Snow fencing left in place for more than a few growing seasons may change the plant communities impacted by the drifts.
- Tents and snow fences may require maintenance because of winds.
- Temperature and light levels in tented areas should be similar to growing- season conditions.
- Each technique identified for extending the growing season has been used in wet or moist North Slope tundra treatment regimes for diesel- and/or crude-oil-affected sites (Cater and Jorgenson, 1999) with varying short-term success. Information on the effectiveness or ineffectiveness of each technique is based on field observations, not controlled experiments. No test data exist which document whether the use of these techniques results in long-term benefits to tundra restoration compared with other tactics, combinations of tactics, or "no action."

EQUIPMENT, MATERIALS, AND PERSONNEL

- Plastic snow fencing (available in 4-foot-wide rolls) (2 to 3 people to install) – stretch sheets between steel poles to block snow drifts
- Steel poles and means of installation (2 to 3 people) – to support plastic snow fencing
- Wire and stakes (2 people to set up, 1 person to maintain) – guy wiring to stabilize snow fences
- Polyethylene and metal or lumber frame material (3 to 6 people to build, 1 to 2 people to maintain) – construction materials for tent
- Forced-air heater (2 people to install, 1 person to maintain) – to provide heat and ventilation, and inflate tent